CLAIMS

We claim:

1. A method for removing organic contaminants from a substrate comprising the steps:

holding said substrate in tank; and

filling said tank with a gas mixture comprising water, ozone and an additive acting as a scavenger.

- 2. A method as recited in claim 1, further 10 comprising the step of adding to said mixture a gas selected from the group consisting of oxygen, nitrogen and argon.
 - A method as recited in claim 1, wherein at least one of the organic contaminants is a confined layer covering at least part of said substrate.
- 15 **4.** A method as recited in claim 3, wherein said confined layer has a thickness in the range of submonolayer coverage and $1\mu m$.
 - 5. A method according to claim 1, wherein said gas mixture is in contact with said substrate.
- 20 6. A method as recited in claim 1, wherein said additive is acting as OH radical scavenger.
 - A method as recited in claim 1, wherein said additive is selected from the group consisting of a carboxylic acid, a phosphonic acid and the salts thereof.
- 25 8. A method as redited in claim 7, wherein said additive is acetic acid.
 - 9. A method according to claim 1, wherein the proportion of said additive in said gas mixture is less than 10% molar weight of said gas mixture.
- 30 10. A method according to claim 9, wherein the

proportion of said additive in said gas mixture is less than 1% molar weight of said mixture.

- A method according to claim 10, wherein the proportion of said additive in said gas mixture is less than 0.5% molar weight of said gas mixture.
- A method according to claim 11, wherein the proportion of said additive in said gas mixture is less than 0.1% molar weight of said gas mixture.
- according claim further 13. method to 1, rinsing said substrate with a comprising the \step of 10 solution.
 - 14. A method as recited in claim 13, wherein the solution comprises de ionised water.
- 15. A method as recited in claim 14, wherein said solution further comprises at least one solution selected from the group consisting of HCl, HF, HNO₃, CO₂ and O₃.
 - 16. A method as recited in claim 14, wherein said solution is subjected to megasone agitation.
- 17. A method as recited in claim 1, further 20 comprising the steps of

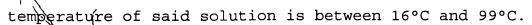
filling said tank with a solution comprising water and said additive, the solution level in said tank remaining below said substrate; and

heating said solution.

- 25 **18.** A method as recited in claim 17, further comprising the step of filling said tank with ozone.
 - 19. A method as recited in claim 18, wherein the ozone is bubbled through the solution.
 - 20. A method as recited in claim $\setminus 17$, wherein the

20





- 21. A method as recited in claim 20, wherein the temperature of said solution is between 20°C and 90°C.
- 22. A method as recited in claim 21, wherein the temperature of said solution is between 60°C and 80°C.
- A method as recited in claim 1, wherein the water is a samurated water vapor.
- 24. Method as recited in claim 1, wherein the ozone concentration in the mixture is less than 10% molar 10 weight of said mixture.
 - 25. A method as recited in claim 1, wherein the temperature of said mixture is below 150°C but higher than the temperature of said substrate.
- 26. A method as recited in claim 1, wherein said
 15 substrate is a silicon wafer.
 - 27. A method for removing organic contaminants from a substrate comprising the steps of:

holding said substrate in a tink; and

- filling said tank with a fluid comprising water, ozone and an additive acting as a scavenger, and wherein the proportion of said additive in said fluid is less than 1% molar weight of said fluid.
- 28. The method as recited in claim 27 wherein said temperature of said fluid is below 150 C but higher than the 25 temperature of said substrate.
 - 29. A method for removing contaminants from a silicon substrate comprising the steps: \

holding said substrate in a tank;

filling said tank with a fluid mixture



20

30





comprising water and ozone to thereby achieve an oxide growth on said substrate;

removing the oxide; and drying the silicon wafer.

- 5 30. The method as recited in claim 29 wherein said fluid mixture comprises at least one fluid selected from the group consisting of a gas, a liquid, steam, a vapor and a mixture thereof.
- 31. The method as recited in claim 29 further 10 comprising the step of growing a thin passivating oxide layer on said silicon wafer prior to the step of drying said wafer.
 - 32. The method as recited in claim 31 wherein said step of growing said thin passivating oxide layer is executed in a mixture of dilute HOA and ozone.
- 15 33. The methor as recited in claim 29 wherein the step of removing the oxide is executed in a solution of dilute HF with or without additives such as HCl.
 - 34. The method as recited in claim 29 wherein said fluid mixture is further comprising an additive acting as a scavenger.
 - The method as recited in claim 29 wherein—the fluid further comprises at least one acid selected from the group consisting of acetic acid and nitric acid.
- 36. A method for removing contaminants from a 25 silicon substrate comprising the steps:

holding said substrate in tank;

filling said tank with a gaseous mixture comprising water and ozone to thereby achieve an oxide growth on said substrate;

removing the oxide; and





drying the silicon wafer.

- 37. The method as recited in claim 34 further comprising the step of growing a thin passivating oxide layer on said silicon wafer prior to the step of drying said wafer.
- 5 38. The method as recited in claim 35 wherein said step of growing said thin passivating oxide layer is executed in a mixture of dilute HCl and ozone.
 - 39. The method as recited in claim 34 wherein the step of removing the oxide is executed in a solution of dilute HF with or without additives such as HCl.
